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STATE OF ILLINOIS
DEPARTMENT OF REGISTRATION AND EDUCATION
A. M. SHELTON, *Director*

DIVISION OF THE
STATE GEOLOGICAL SURVEY
M. M. LEIGHTON, *Chief*

REPORT OF INVESTIGATIONS NO. 2

STRUCTURE OF PARTS OF NORTHEASTERN
WILLIAMSON AND WESTERN
SALINE COUNTIES

BY
GILBERT H. CADY

IN COOPERATION WITH U. S. GEOLOGICAL SURVEY



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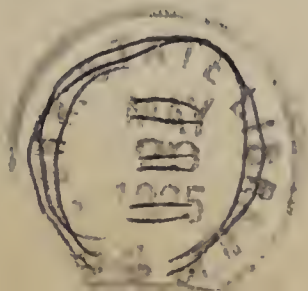
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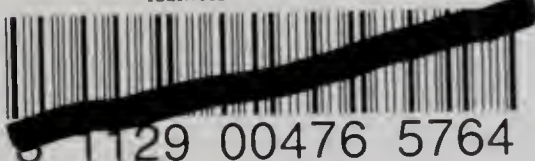


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STRUCTURE OF PARTS OF NORTHEASTERN WILLIAMSON AND WESTERN SALINE COUNTIES

By Gilbert H. Cady

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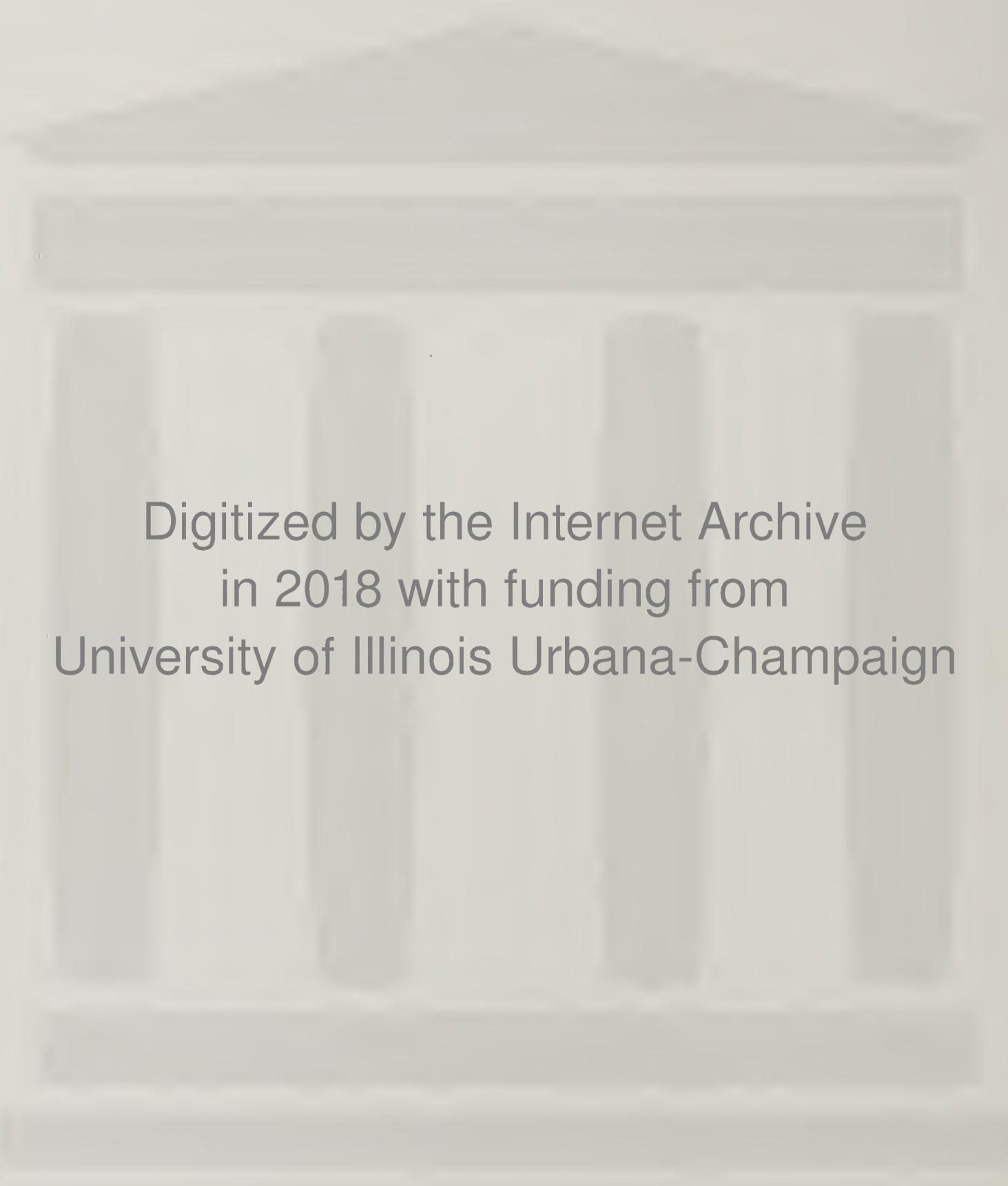
- I. Structural map of parts of northeastern Williamson and western Saline counties, showing contours on No. 5 coal and the interval between No. 5 and No. 6 coals.....In pocket
- II. A. Graphic section of strata encountered in a number of diamond drill borings in the area. B. Index map upon which the thicknesses of and interval between Nos. 5 and 6 coals are indicated
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INTRODUCTION

The purpose of this report is to discuss the special structural features which materially affect the value of the coal deposits in portions of northeastern Williamson and western Saline counties. The location of this area is shown in figure 1. This report is not designed to present the details of the stratigraphy of the area nor to describe the mineral resources. A forthcoming report to be published as a folio of the Geological Atlas of the U. S. Geological Survey involving a larger area, the Galatia and West Frankfort quadrangles, will contain descriptive data in regard to the geological succession and the mineral resources. The coal beds and associated rocks have already been described in bulletins of the Illinois Coal Mining Investigations.^{1, 2}

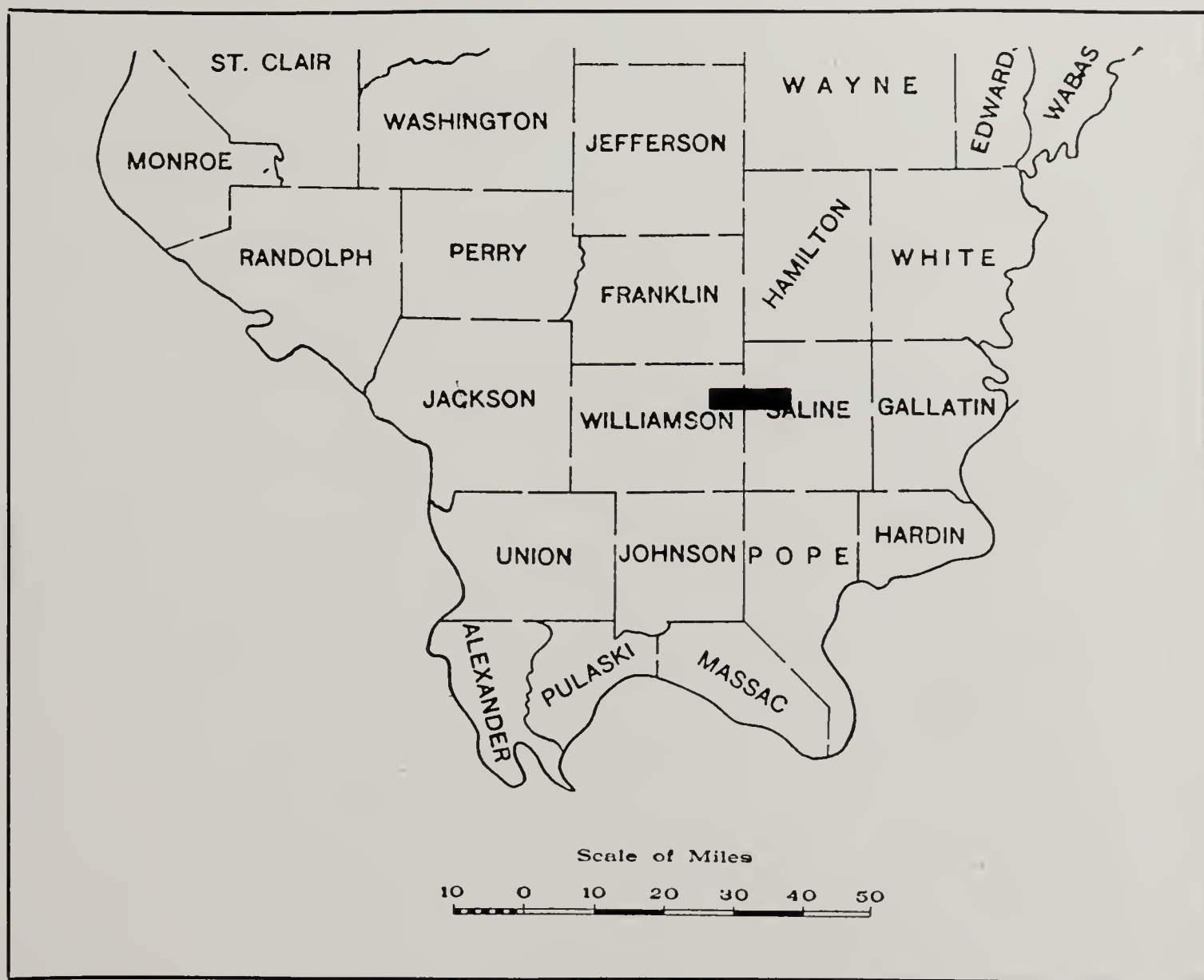


Fig. 1. Index map of southern Illinois showing location of area covered by the report.

IMPORTANCE OF THE AREA

The area herein reported upon is about midway between the main Williamson County mining district lying between Herrin and Marion, and the Harrisburg district of Saline County. Development is encroaching

¹ Cady, G. H., Coal resources of District VI: Ill. Mining Investigations Bull. 15, 1916.
² Cady, G. H., Coal resources of District V: Ill. Mining Investigations Bull. 19, 1919.

upon the area and already three mining operations are located within its boundaries. Further interest attaches to the area in that the line of the Illinois Central cut-off through southern Illinois is reported to be projected across it. Two beds of workable coal are known to underlie the area; one other workable bed is probably present and possibly a fourth. On the conservative assumption of an average thickness of five feet for both No. 5 and No. 6 coals, the total amount of coal in the beds within this area amounts to about 675,000,000 tons. It is not improbable that there is at least one-third as much more coal present in lower beds, particularly in the No. 2 bed.

GENERAL STATEMENT OF RESULTS OF THE INVESTIGATION

1. The formations of the area are variously inclined and flexed, resulting in a considerable variation of level at which the coal beds may be encountered in drilling or sinking shafts.

2. Remarkable displacements or faults occur along certain lines or zones which produce offsets that must be taken into account in correlating the coal beds and in plans for the recovery of the coal.

3. The interval between Nos. 5 and 6 coals increases eastward from 80 feet in the western part to 130 feet in about the middle part of the east half, east of which the interval slightly decreases.

4. Variations in the thickness of No. 5 coal correspond with the variations in the interval between No. 5 and No. 6 coal. That is, No. 5 coal thickens eastward to about the middle of the east half of the area, east of which it is somewhat thinner. There is no regularity in the variations of No. 6 coal.

REGIONAL GEOLOGY

STRATIGRAPHIC SUCCESSION

The region lies a few miles north of the southern border of the Illinois coal basin. Southward toward this border, because of the general northward dip of the strata, successively older and older series of rocks or formations belonging to the Pennsylvanian system or "Coal Measures" outcrop in belts running parallel to the edge of the basin. The upper and hence innermost formation of the Pennsylvanian system is the McLeansboro formation, which includes all Pennsylvanian strata above the top of No. 6 or Herrin (Blue-band) coal. Underlying the McLeansboro formation and forming an intermediate belt of outcropping rocks is the Carbondale formation which includes all strata from the top of No. 6 coal to the base of No. 2 or Murphysboro coal. Within this formation is also No. 5 or Harrisburg coal. The lowermost portion of the

Pennsylvanian outcrops at the border of the coal basin and includes all Pennsylvanian strata below No. 2 coal. These strata constitute the Pottsville formation. The resistance to erosion of several Pottsville sandstone beds outcropping in southern Illinois is largely responsible for the relief of the belt of elevated country known as "The Mountains" which lies within view a few miles to the south.

STRUCTURE

These strata are all characterized by the gentle northward dip toward the center of the Illinois Coal Basin which lies fifty miles or more to the north. Here and there, however, are found local interruptions of this northward dip where the strata lie horizontally or are locally inclined more steeply in other directions than to the north, or where they have been broken by faults. Of these irregularities in the lay of the rocks in the coal basin of southern Illinois, the most important is without doubt the structure known as the Duquoin anticline which separates a relatively shallow portion from a relatively deep portion of the basin along a line running north from a point between Carbondale and Duquoin to a point north of Centralia. Across the deeper portion of the basin which lies to the east of the Duquoin anticline there are at least two important zones of structural irregularity, in each of which faulting is a conspicuous element. One zone extends northward between Marion and Herrin and is encountered in mining operations northwest of Marion, west of Johnston City, at Orient and elsewhere. The other zone begins on the east near Equality, Gallatin County. It passes about two miles north of Harrisburg, and continues slightly north of westward crossing the area described in this report. Thence it passes about two miles north of Johnston City and possibly terminates along the Williamson and Franklin county line between Bush and Royalton. It is with the effect of earth movements along this latter fault zone within the local area described in this report that we are chiefly concerned.

GEOLOGY OF THE LOCAL AREA

SURFICIAL GEOLOGY

The local area is a region of moderate relief and the hills composed of sandstone are dissected by streams commonly with flat-floored valleys such as characterize parts of the glaciated interior lowlands of southern Illinois. A thin covering of glacial drift lies on most of the hills, but is not universally distributed. Above the drift or upon the rock surface where the drift is absent there is almost everywhere a thin coating of yellow silt or loess commonly two to three feet in thickness and probably of aeolian origin. This material is more widely distributed than the

drift, being found at practically all levels, either as original deposit or as wash, therefore generally obscuring rock outcrops. Here and there thicker deposits of glacial drift fill depressions in the rock surface which probably were portions of the preglacial valley system that have not yet been cleaned out by the present streams.

BED ROCK

Outcrops of bed rock are found for the most part along channels of streams and in road cuts. Here and there on hillsides an especially hard ledge of rock will protrude through the thin covering of silt, loess, or till, but the continuous tracing of any formation for more than a short distance, say a quarter of a mile, is impracticable. The similarity of the rocks in different stratigraphic horizons, together with the discontinuity of outcrop and irregularity in the structure, makes definite correlation of outcropping strata generally impossible. Invaluable for purposes of correlation of outcropping strata and interpretation of the structure are the records of scores of drill holes scattered over the area.

The Pennsylvanian rocks outcropping in this area are probably all of McLeansboro age, that is, they belong to that part of the Pennsylvanian section above No. 6 coal. In one locality and possibly in two, both in the S. $\frac{1}{2}$ sec. 35, T. 8 S., R. 4 E., there may be exposed a few feet of Carbondale strata, including part of No. 6 coal, its underclay, and a few feet of underlying rock.

No attempt is made to show on Plate I the area underlain by the various outcropping members of the McLeansboro formation, because of the uncertainty that attaches to the correlations. It, however, shows the general distribution of outcropping rocks in the valleys and on the flanks of some of the hills. The various formations are designated on the map by appropriate patterns, and where the limestone is known to contain a fusulinoid shell, the limestone pattern is accompanied by the letter "F." Such limestones may not everywhere be the same, but it seems probable that they occur in the lower 100 feet of the McLeansboro formation. The form which is rather abundant and the most prevalent in the limestones of the lower part of the McLeansboro near No. 6 coal is commonly about $\frac{1}{10}$ of an inch in diameter and $\frac{1}{4}$ of an inch long, tapering to a point at both ends, the whole fossil having a shape resembling a very thick and short grain of wheat (fig. 2-A). It is known as *Gertyina ventricosa* (Meek). As commonly seen in cross section (fig. 2-B) it shows a concentric cellular structure. Its stratigraphic range has not been fully determined.

The section of the McLeansboro formation present and presumably outcropping in the area is indicated in the graphic sections reproduced

from several coal test diamond drill borings in the area (Plate II). Outcropping strata probably include no beds below No. 6 coal.

Underlying the exposed rocks are the lower portions of the Pennsylvanian section, the Carbondale and Pottsville formations, to a known thickness in one locality (sec. 8, T. 9 S., R. 5 E.) of about 1340 feet. The Carbondale formation has a relatively small variation in thickness in southern Illinois, but the extent to which the thickness of the Pottsville

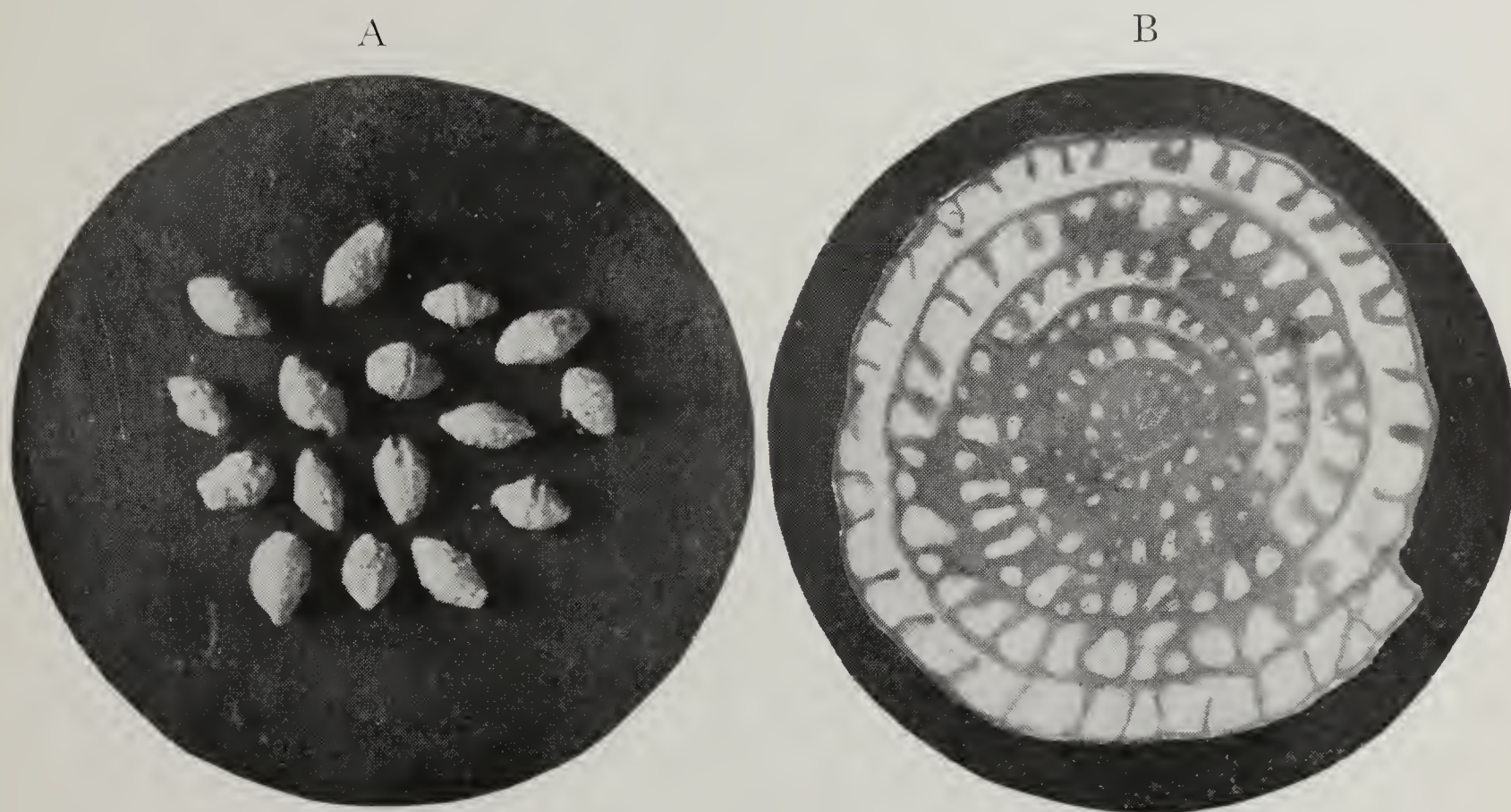


Fig. 2. Photograph of specimens of *Gertyina ventricosa*.

A. Enlarged approximately twice.

B. Cross section enlarged approximately 32 times.

formation may vary is unknown since only a very few drill holes have penetrated the formation.

Beneath the Pennsylvanian strata are the formations belonging to the Chester series of the Mississippian system, attaining a known thickness of about 900 feet. Rocks of still deeper formations have not been penetrated within the area except for about 100 feet, so that the thickness of the sedimentary strata above granite or crystalline rock is unknown but probably amounts to many hundred feet.

STRUCTURE

DESCRIPTION OF THE STRUCTURAL MAP

In order to clearly present the information which is of utmost value to exploratory work a structure contour map has been made. Attention

is directed to the method of portraying these structural features on the structural map, Plate I.

Plate I shows the position and dip and strike of observed faults and rock outcrops, and the location of drill holes and mine shafts. The surface elevation of each boring and shaft, the depth and altitude of the bottom of No. 5 and No. 6 coals, and the thickness of each bed where this information can be given without violating confidential data, are given in Table I, page 13.

Plate III is essentially a copy of part of a familiar field map prepared by the Guarantee Trust Company showing the location and number of holes drilled by several companies in western Saline and eastern Williamson counties before 1910. The original map showed depth and thickness of the coal, but this information is omitted as unnecessary for purposes of identification of the holes. In addition to data on the original map, Plate III shows by circles the location of holes drilled since 1910, and the company number of each hole. For some of the borings, corrected locations were obtained in the field. Such necessary changes are indicated by arrows pointing to the symbols representing revised locations.

Identification on Plate I of holes shown on Plate III is readily made by reference to Table I where the original company number of each hole is given in column 4 listed by township and section. Then by reference to column 5, the map number can be found, by which the hole can be located on Plate I, if direct identification from map to map is uncertain.

The structure of the area is delineated by red contour lines which refer to the altitude of the base of No. 5 coal, relative to sea-level datum. The upper surface of a coal bed is more commonly used as a datum in structure maps appearing in publications of the Illinois State Geological Survey, but in this special report it seems advisable to conform to local engineering practice and use the base of the coal bed as datum.

Reference to Plate I reveals the undulatory structure of the No. 5 coal; it reaches an altitude of 350 feet above sea level in the NE. $\frac{1}{4}$ of sec. 1, T. 9 S., R. 4 E. and an altitude of 25 feet below sea level in the S. $\frac{1}{2}$ sec. 24, T. 8 S., R. 5 E. In areas of outcrop, the map shows the direction of dip by small blue arrows accompanied by figures denoting the amount of dip.

In addition to being tilted, the strata are in places displaced or faulted. Such faults are designated by heavy continuous or interrupted blue lines. Where the blue lines are unbroken, there is no doubt as to the existence and position of the fault. Fault structures are exposed where fault lines are shown crossing an area of outcropping rock. Elsewhere the fault lines are projected in the general direction of the trend

of the outcrops of the faults or are indicated where they seem to be the proper explanation for differences in the elevation of the coal as determined by drilling.

METHOD OF SHOWING THE ALTITUDE OF NO. 6 COAL

Since exploitation of the coal on the west side of the area is in No. 6 (Herrin or Blue-band) coal, it is important to show the altitude of that coal with reference to the altitude of No. 5. This is done by the use of broken red lines, commonly called convergent contours, which indicate the vertical interval between the two coal beds, as shown on Plate I. The altitude of No. 6 coal at any place may then be obtained by adding the amount of the interval between the two coals as indicated by the convergent contours to the altitude of No. 5 coal as indicated by the structure contours. Inspection of the map shows that there is a gradual increase eastward in this interval to about the middle of the east half of the area beyond which there is a slight decrease in the interval.

PRINCIPAL STRUCTURAL FEATURES

The main features of interest in the structure are: (1) the Corinth fault which runs N. about 60 degrees E. from the Williamson-Saline county line; (2) the Brushy anticline in secs. 4, 5, 8 and 9, Brushy Township (T. 9 S., R. 5 E.); (3) the trough running parallel with and south of the Corinth fault and Brushy anticline; (4) Brushy Creek fault running about N. 25 degrees E. about $\frac{1}{2}$ mile west of Bankston Fork Church (sec. 10, T. 9 S., R. 5 E.); (5) Bankston Fork fault crossing the NW. $\frac{1}{4}$ sec. 12, Brushy Township. This last named structure is possibly a continuation of the Harrisburg fault which crosses secs. 2 and 3, and possibly secs. 4 and 5, Harrisburg Township (T. 9 S., R. 6 E.). For all these structures, except the last one mentioned, surface evidence is known. Faulting across Bankston Fork in sec. 12, Brushy Township, is thought to be the most probable explanation of the differences in the altitude of the coal as shown on the map in secs. 1 and 12, Brushy Township, and secs. 6 and 7, Harrisburg Township, as revealed by drilling. This interpretation of the structure was reached after a study of the drill records in the office at the close of the season's field work. No outcrops were observed which threw light on this interpretation.

METHOD OF SHOWING VARIATION IN THICKNESS OF COAL

Inasmuch as Table I includes figures showing the thickness of the coals, relationships of additional interest but not of a structural character may readily be indicated. Thus, by drawing lines separating areas in

which the coals are of different thickness, the variations in the thickness of the coals can be indicated (Plate II-B).

Inspection shows that there is apparently no regularity in the variations in the thickness of No. 6 coal, whereas the variations in the thickness of No. 5 coal are regular, the coal increasing in thickness from west to east to about the middle of the east half of the area, east of which there is a slight decrease in thickness. It will doubtless be noted that the variations in the thickness of No. 5 coal and the variations in the interval between No. 5 and No. 6 coals as previously noted have a similar geographic distribution, a similarity which holds not only in this area but which has been worked out for a much larger area in the Franklin and Williamson county fields.³

³ Cady, G. H., Coal Resources of District VI: Illinois Mining Investigations Bull. 15, pp. 26-36, 1916.

TABLE 1—Location and level data for borings located on Plate I.

Location		Company		Map No.	Surface altitude	Elev. b method	No. 6 Coal			No. 5 Coal ^e			Remarks			
Sec.	Part of sec. ¼ ¼	Name ^a	No.				Depth to bottom	Altitude of bottom	Thickness	Depth to bottom	Altitude of bottom	Thickness				
				SALINE COUNTY												
T. 8 S., R. 5 E.																
19	SE NE	G	151	1	408	H. L.	327	81	5	8	420	-12	4	6		
19	SE NW	G	169	2	422	B. D.	309	113	5	8	401	21	4	6		
19	NE SE	G	140	3	404	B. D.	308	96	5	2	401	3	4	3		
19	SE SW	G	171	4	435	H. L.	296	139	5	5	393	42	4	5		
20	NW NW	G	126	1	405	H. L.	344	61	5	11	441	-36	4	1		
20	Cen. NE	G	121	2	400	B. D.	331	69	6	..	434	-34	5	2		
20	SE NW	G	113	3	399	H. L.	318	81	6	10	421	-13	4	10		
20	Cen. SW	G	117	4	409	B. D.	310	99	5	11	414	-5	4	4		
25	NW NW	.....	.....	1	410	O. E.	?	.....	.....	.....	?	.....	.....	.....	.....	Oil test
25	NW NW	G	104	2	412	B. D.	255	156	5	9	out	out	out	out		
25	NE SE	G	78	3	380	H. L.	280	100	5	8	398	-18	6	2		
26	NW NE	G	95	1	431	H. L.	296	135	5	4	422	11	7	1		
26	SE NE	G	82	2	428	B. D.	269	159	5	4	out	ou	ou	out		Churn drill
26	NE SW	G	97	3	438	B. D.	307	131	5	1	428	10	6	4		Churn drill
26	NE SW	H	B-1	4	433.4	H. L.	286d	147d	..	..	406d	27d	..	..
26	Cen. SW	G	85	5	445	H. L.	310	135	6	6	431	14	7	0		
27	NW NW	G	73	1	435	H. L.	291	144	5	4	401	34	4	7		
27	SW NE	G	96	2	440	B. D.	309	131	6	0	411	29	5	6		
27	SE NE	G	83	3	427	B. D.	301	126	5	5	428	-1	6	8		

a, b, c, d, e, Explanatory footnotes are given at the end of the table, page 21.

TABLE 1—Location and level data for borings located on Plate 1—Continued.

Location		Company		Map No.	Surface altitude	Elev. ^b method	No. 6 Coal			No. 5 Coal ^c			Remarks
Sec.	Part of sec.	Name ^a	No.				Depth to bottom	Altitude of bottom	Thickness	Depth to bottom	Altitude of bottom	Thickness		Depth to bottom	Altitude of bottom
	$\frac{1}{4}$			$\frac{1}{4}$									
27	NW SE	Ha	HC-1	4	424	P. E.	297d	127d	..	414d	10d	..	
27	NE SW	G	81	5	434	H. L.	295	139	5	416	18	6	0
27	SE SE	G	77	6	430	H. L.	270	160	5	390	40	6	0
27	SE SW	Ha	HC-5	7	432.6	P. E.	271d	162d	..	399d	34d	..	
27	SE SW	Ha	Shaft	8	423.4	P. E.	.....	.....	6	416	8	6	0
27	SW SW	Ha	HC-4	9	411.8	P. E.	260d	152d	..	370d	42d	..	
28	SW NW	G	86	1	435	H. L.	298	137	5	406	29	4	3
28	NE SW	G	80	2	420	H. L.	317	103	5	421	-1	4	3
28	SE SW	G	87	3	442	H. L.	293	149	5	408	34	5	2
28	NW SE	Ha	HC-2	4	412.1	P. E.	283d	129d	..	394d	18	..	..
29	NE NE	G	65	1	418	H. L.	282	136	5	N.D.E.	N.D.E.	N.D.E.	
29	NW NE	G	102	2	432	H. L.	301	131	6	407	25	4	3
29	NW NW	G	74	3	433	B. D.	299	134	6	406	27	4	4
29	NW SE	G	79	4	465	P. E.	302	163	5	406	59	4	5
29	SW SW	G	66	5	455	B. D.	264	191	5	N.D.E.	N.D.E.	N.D.E.	
30	NE SE	G	84	1	466	P. E.	291	175	5	394	72	4	7

Hole may be located in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 27.Possibly located in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29.

30	NW	SW	G	72	2	496	P. E.	325	171	8	11½	414	82	4	0
31	NE	NW	G	92	1	433	P. E.	246	187	5	5	340	93	4	7
31	SE	NE	SG	1	2	434	P. E.	221d	213d	..	..	326d	108d	..	..
31	NW	NE	SG	2	3	449	P. E.	245d	204d	..	..	345d	104d	..	..
31	NW	NE	SG (Shaft)	3	4	438	P. E.	231d	207d	..	..	330d	108d	..	..
32	NE	Cor.	G	63	1	456	H. L.	294	162	6	0	N.D.E.	N.D.E.	N.D.E.	
32	NW	SE	G	59	2	426	P. E.	233	193	5	8	334	92	4	0
32	SW	SW	G	47	3	437	H. L.	169	268	6	0	N.D.E.	N.D.E.	N.D.E.	
33	NW	SE	G	64	1	408	P. E.	199	209	6	5	308	100	5	0
33	SW	SW	G	12	2	400	H. L.	96	304	5	6	198	202	5	0
33	SW	NW	Ha	HC-3	3	427.6	P. E.	203d	224d	..	..	315d	112d	..	..
34	NW	NW	G	75	1	420	H. L.	286	134	5	4	388	32	5	0
34	NE	NE	H	B-2	2	403?	H. L.	250d	153d	..	..	386d	17d	..	..
34	NE	SE	G	91	3	390	B. D.	214	176	6	2	324	66	2	3
34	SE	SW	G	89	4	416.9	P. E.	.....	.....	..	..	322	95	6	2
34	SW	NE	H	B-3	5	396.2	P. E.	238d	158d	..	..	370d	26d	..	..
34	NE	NW	H	B-4	6	400.6	P. E.	240d	161d	..	..	365d	36d	..	..
34	SE	NW	H	B-5	7	411.1	P. E.	243d	168d	..	..	370d	41d	..	..
35	NE	SE	G	114	1	420	H. L.	256	164	5	4	359	61	5	9
35	NE	SW	G	99	2	423	H. L.	264	159	5	2	397	26	6	5
35	SW	SW	G	119	3	382.6	P. E.	193	190	6	1	319	64	6	8
36	NW	NW	G	76	1	438	H. L.	266	172	6	5	N.D.E.	N.D.E.	N.D.E.	
T. 9 S., R. 5 E.															
1	NW	Cor.	G	35	1	377	H. L.	164	213	5	0	N.D.E.	N.D.E.	N.D.E.	
1	NE	NE	G	5	2	397	?	149	248	6	0	244	153	3	3
1	SW	NE	G	46	3	375	H. L.	86	289	3	0	195	179	3	0
1	SE	SW	G	6	4	374	H. L.	85	289	4	9	out	out	out	out

a, b, c, d, e. Explanatory footnotes are given at the end of the table, page 20.

TABLE 1—Location and level data for borings located on Plate I—Continued.

Location		Company		Map No.	Surface altitude	Elev. ^b method	No. 6 Coal			No. 5 Coal ^c			Remarks		
Sec.	Part of sec. $\frac{1}{4}$ $\frac{1}{4}$	Name ^a	No.				Depth to bottom	Altitude of bottom	Thickness	Depth to bottom	Altitude of bottom	Thickness			
2	NW NE	G	106	1	383.5	P. E.	175	208	5	5	290	93	5	3	
2	SE SW	G	7	2	384.1	P. E.	122	262	5	4	189 ^c	195 ^e	5	6	
2	NE SE	G	110	3	374	B. D.	112	262	5	7	247	127	10	..	Bone and coal
2	NW SW	G	32	4	400.2	P. E.	116	284	5	2½	235	165	4	10½	Bone and coal
3	SE NE	G	44	1	397.2	P. E.	279	118	5	6	N.D.E.	N.D.E.	N.D.E.	N.D.E.	Churn drill
3	NW NE	G	111	2	395	H. L.	193	202	0	2	300	95	1	4	
3	NW SW	G	53	3	436	P. E.	133	303	5	1	249	187	4	9	
3	NW NW	H	B-6	4	395	P. E.	120 ^d	275 ^d	..	..	252 ^d	143 ^d	..	..
3	SE SW	H	B-7	5	406.1	P. E.	89 ^d	317 ^d	..	..	211 ^d	195 ^d	..	..
4	SW SW	H	B-8	1	460.2	P. E.	117 ^d	343 ^d	..	..	242 ^d	218 ^d	..	..
4	NE Cor.	G	13	2	396	P. E.	145	251	5	2	272	124	6	4	
4	NE SW	G	49	3	440.8	P. E.	121	320	4	4	228	223	5	6?	
5	SW NE	G	52	1	471	H. L.	133	338	5	6	242	229	4	6	
5	NW NE	H	B-11	2	440.8	P. E.	102 ^d	339 ^d	..	..	209 ^d	232 ^d	..	..
6	NE NW	G	58	1	510	P. E.	220	290	6	1	N.D.E.	N.D.E.	N.D.E.	N.D.E.	

	SE	NE	G	93	2	440	B. D.	215	225	5	5	394	46?	6	3	Churn drill Identity No.
6			G													5 coal un- certain
6	SW	SE	G	56	3	497	H. L.	200	297	3	0	303	194	5	8	Churn drill
6	SE	Cor.	G	55	4	465	H. L.									Correlation uncertain
6	SE	NW	H	B-12	5	487.2	P. E.	205d	282d			320d	167d			
7	SE	NE	G	11	1	475	B. D.	225	250	6	5	349	126	4	11	
7	NW	NW	H	B-13	2	431.15	H. L.	240d	191d			355d	76d			
7	SW	SE	H	B-14	3	411.8	P. E.	189d	223d			325d	87d			
8	NE	NE	G	51	1	479.8	P. E.	132	346	6	0	335	244	4	4	
8	NE	SW	G	62	2	443	P. E.	76	367	5	4	183	260	0	6	Approximate location
8	SW	SW	G	57	3	405	B. D.	177	228	5	6	N.D.E.	N.D.E.			
8	NE	NW	H	B-10	4	446.45	P. E.	71d	375d			194d	252d			
8	SE	NE	H	B-9	5	466.45	P. E.	71d	395d			185d	281d			
8	NE	NW			6	475	H. L.	105	370	7	0	220	255	6	0	Oil test
9	Cen	N. line	G	20	1	480.9	P. E.	145	336	6	2	284	197	6	6	Churn drill
9	SE	NW	G	50	2	462	P. E.	120	342	7	0	243	219	6	5	Churn drill
10	NW	NW	G	19	1	442	H. L.	114	328	6	0	239	203	4	8	
10	SW	NE	G	21	2	447	P. E.	138	309	6	0	268	179	7	3	Churn drill
11	NE	NE	G	112	1	384	H. L.	out	out	out		192	192	5		
11	SE	NW	G	34	2	407.2	P. E.	78	329	5	6	202	205	7	0	
11	SE	NE	G	8	3	376.5	H. L.	151	225	9	1	262	114	1	5	
12	S½	NE	G	135	1	360	B. D.	47	313	5	1	out	out	out		Churn drill
12	NE	SW	G	18	2	365	O. E.	118	247	5	8	269	96	6	1	

a, b, c, d, e. Explanatory footnotes are given at the end of the table, page 20.

TABLE 1—Location and level data for borings located on Plate I—Continued.

Location		Company		Map No.	Surface altitude	Elev. b method	No. 6 Coal			No. 5 Coal ^c			Remarks	
Sec.	Part of sec. — ¼ ¼	Name ^a	No.				Depth to bottom	Altitude of bottom	Thickness	Depth to bottom	Altitude of bottom	Thickness		
					Feet		Feet	Feet	Feet	Feet	Feet	Feet		
WILLIAMSON COUNTY														
T. 9 S., R. 4 E.														
1	SW NE	S	60	1	458	F. E.	199	259	5	5	N.D.E.	N.D.E.		
1	NW SW	S	90	2	488	H. L.	234	254	5	7	330	158	3 10	
1	Cen. SE	P	11	3	450	F. E.	276	174	5	..	N.D.E.	N.D.E.	N.D.E.	
1	SE NW	S	88	4	470	.....	101	369	5	2	196	274	4 1
2	NW NE	G	108	1	566.9	P. E.	231	335	4	7	327	240	3 2	
2	SW SW	P	9	2	562	F. E.	266	296	6	..	N.D.E.	N.D.E.	N.D.E.	
2	SW SE	P	10	3	550	F. E.	275	275	5	6	N.D.E.	N.D.E.	N.D.E.	
3	NE NE	.....	6	1	580	F. E.	190	390	8	6	N.D.E.	N.D.E.	N.D.E.
3	SE SW	?	8	.....	565	.....	292	273	6	5	N.D.E.	N.D.E.	N.D.E.
4	NE SW	B	2	1	530	H. L.	259d	271d	..	..	346d	184d	.. ..
6	NE SE ₂	B	1	1	490	H. L.	240d	250d	..	..	317d	173d	.. ..
6	SW NE	P	17	2	509	H. L.	265	244	5	6	N.D.E.	N.D.E.	N.D.E.	
6	SE NE	B	2	3	.....	.....	.....	249d	..	..	.....	171d	.. ..
6	SE NE	CM	Shaft	4	.....	.....	.....	235d	..	..	.....	.....	.. ..
														No record

Location un-
certain; not
on map

8	NE NW	P	16	1	538	H. L.	259	279	5	6	N.D.E.	N.D.E.
9	SW NW	S	141	1	498	H. L.	158	340	5	4	254	4 3
9	SW SE	S	134	2	476	H. L.	115	361	4	10	276	4 6
12	NW NW	G	94	1	553	F. E.	283	250	4	8	N.D.E.	N.D.E.
12	NW NE	S	33	2	445	H. L.	248	197	5	5	N.D.E.	N.D.E.
12	SE NE	S	68	3	474	H. L.	245	229	5	1	N.D.E.	N.D.E.
T. 8 S., R. 4 E.												
20	SW NE	C	16	1	523.2	P. E.	398	125d	..	..	491	36d
21	NW NE	C	17	1	516.1	P. E.	382d	134d	..	..	472d	44d
21	SW SE	C	25	2	508.9	P. E.	348d	161d	..	..	439d	70d
22	NE SW	C	18	1	497.4	P. E.	348d	149d	..	..	444d	53d
23	SW SE	C	20	1	502	P. E.	346d	156d	..	..	443d	59d
24	SE NW	C	19	1	462	P. E.	325d	137d	..	..	421d	41d
25	NE NE	C	103	1	486.8	P. E.	321	166	5	6	421	66
25	SE SE	G	98	2	489	P. E.	281d	208d	..	..	372d	117d
25	SW NW	B	2	3	505	H. L.	346	159	6	4	442	63
26	SE NE	C	24	1	520.9	P. E.	326d	195d	..	..	423d	98d
26	SE SE	C	3	2	443.7	P. E.	224d	220d	..	..	319d	125d
27	NW SE	C	21	1	466.8	P. E.	292d	175d	..	..	385d	82d
27	SE SW	CM	A-1	2	500	P. E.	.....	.....	..	..	N.D.E.	N.D.E.
28	SE Cor.	C	23	1	526.4	P. E.	338d	188d	..	..	429d	97d
28	NW SW	C	2	2	526.3	P. E.	333d	193d	..	..	420d	106d
29	NE SE	.....	9	1	520	H. L.	340	180	8	4	438	82
29	SE SW	B	1	2	495	F. E.	321	174	6	6	406	89
29	SW NE	C	22	3	495.8	P. E.	309d	186d	..	..	396d	86d
30	NW SE	P	6	1	520	H. L.	out ?	out ?	out ?	out ?	290	230
31	SE NW	B	.....	1	480	F. E.	233	247	7	1	320	160
32	NW NE	C	1	1	557.6	P. E.	242d	316d	..	..	331d	227d

a, b, c, d, e. Explanatory footnotes are given at the end of the table, page 20.

TABLE 1—Location and level data for borings located on Plate I—Concluded.

Location		Company		Map No.	Surface altitude	Elev. ^b method	No. 6 Coal			No. 5 Coal ^c			Remarks
Sec.	Part of sec. 1/4 1/4	Name ^a	No.				Depth to bottom	Altitude of bottom	Thickness	Depth to bottom	Altitude of bottom	Thickness	
				Feet	Feet	Ft. In.	Feet	Feet	Ft. In.				
32	SE NE	CM	3-B	2	540.7	P. E.	.....	.....	.....	.....	.....	.....
33	SE NE	CM	2-B	1	536	P. E.	.....	.....	.....	.....	.....	.....
33	NE SE	CM	5-B	2	558.5	P. E.	.....	.....	.....	.....	.....	.....
34	NE NE	G	160	1	491.5	P. E.	.....	.....	.....	.....	.....	.....
34	NE SE	G	157	2	544.6	P. E.	.....	.....	.....	.....	.....	.....
34	SW SE	G	156	3	546.4	P. E.	.....	.....	.....	.....	.....	.....
34	SW NE	G	158	4	485.9	P. E.	.....	.....	.....	.....	.....	.....
35	NE SE	G	107	1	525.7	P. E.	.....	.....	.....	.....	.....	.....
35	NE NW	G	165	2	523.9	P. E.	.....	.....	.....	.....	.....	.....
35	SE SW	G	109	3	531.1	P. E.	.....	.....	.....	.....	.....	.....
36	NE SE	G	45	1	443	H. L.	.....	.....	.....	.....	.....	.....

^a B—A. R. Byrd and Sons.

^c C—Corinth Coal Company.

CM—Cosgrove Meehan Coal Corporation.

G—Guarantee Trust Company.

H—Harrisburg Saline Collieries.

^b B.D.—Barometric determination

F.E.—Field estimate from topographic map.

H.L.—Hand level determination.

O.E.—Office estimate from topographic map.

P.E.—Precise elevation determined by local engineers

^c N.D.E.—Not deep enough to reach the coal.

^d In order to avoid disclosing confidential data relative to the coals, which could be obtained by comparison with data previously published by the Illinois Geological Survey, the elevation of and depth to the top instead of the bottom of Nos. 5 and 6 coals are given.

^e Because of the smallness of the interval between Nos. 5 and 6 coals reported in the record of this hole, some doubt attaches to the accuracy of the record.

HA—Harrisburg Colliery Company.

MC—Madison Coal Corporation.

P—Peabody Coal Company.

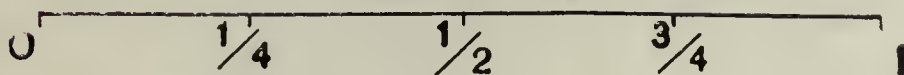
S—Saline County Coal Company.





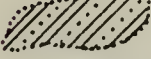
SG—Saline Gas Coal Company.

REPORT OF INVESTIGATIONS NO. 2, PLATE I.

LEGEND


Scale In miles



-  Shale
-  Sandstone
-  Shale and sandstone
-  Black shale and coal
-  Black shale
-  Shale, sandstone, and coal
-  Limestone
-  Micaceous sandstone
-  Shale and coal
-  Siliceous shale
-  Fusulina limestone
-  Shale, limestone, and coal
- Diamond drill hole
- Churn drill hole
- ⊗ Coal mine
- × Quarry
- 500 — Surface contours

— 200 — Contours on base of No. 5 coal

120 - - - - Interval between base of No. 5 and base of No. 6 coals

— Fault.  indicates downthrow side

- - - Probable fault

T.
8
S.

100

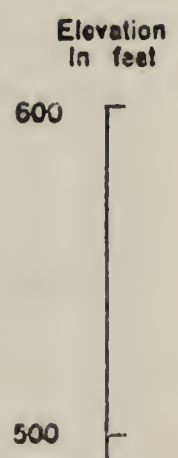
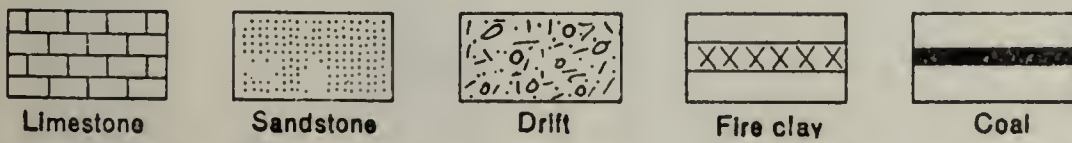
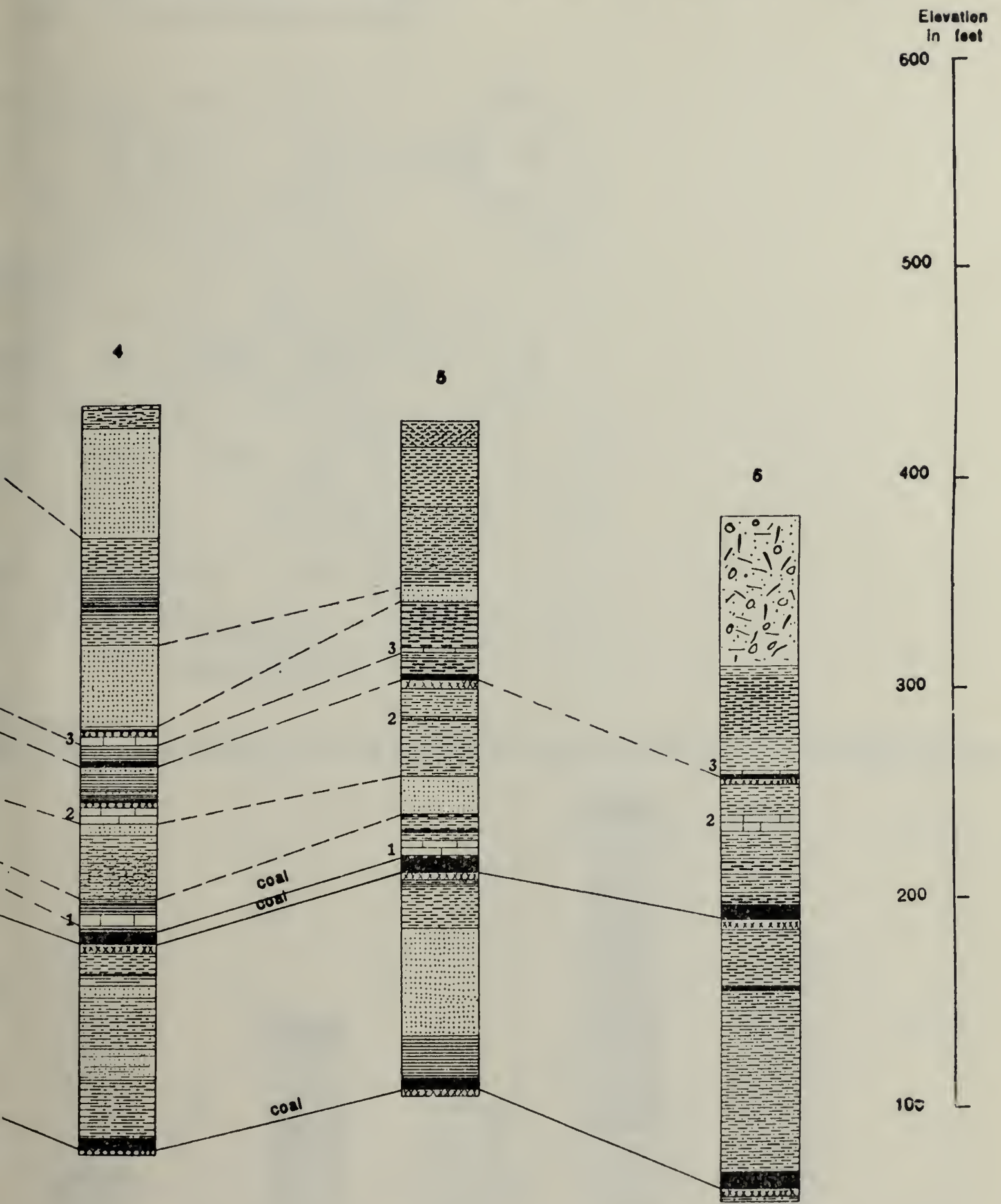


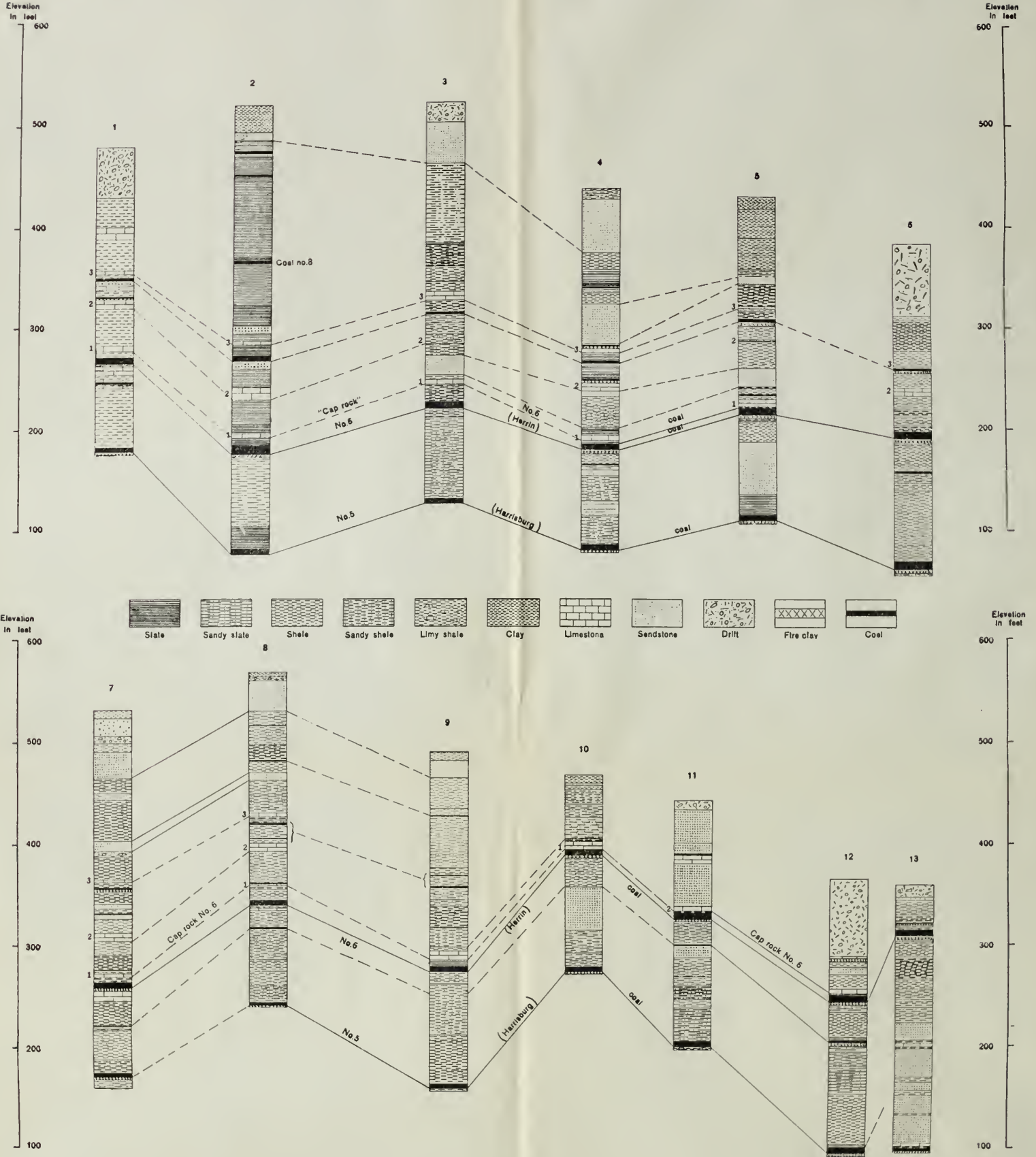
LEGEND
Scale in miles
0 1/4 1/2 3/4 1

- Shale
- Sandstone
- Shale and sandstone
- Black shale and coal
- Black shale
- Shale, sandstone, and coal
- Limestone
- Miocene sandstone
- Shale and coal
- Siliceous shale
- Fossiliferous limestone
- Shale, limestone, and coal
- Diamond drill hole
- Churn drill hole
- Coal mine
- Quarry
- Surface contours
- 200 Contours on base of No. 5 coal
- 100 Interval between base of No. 5 and base of No. 6 coals
- Fault indicates downthrow side
- Probable fault
- Dip and strike figure indicates degree of dip
- Horizontal strata

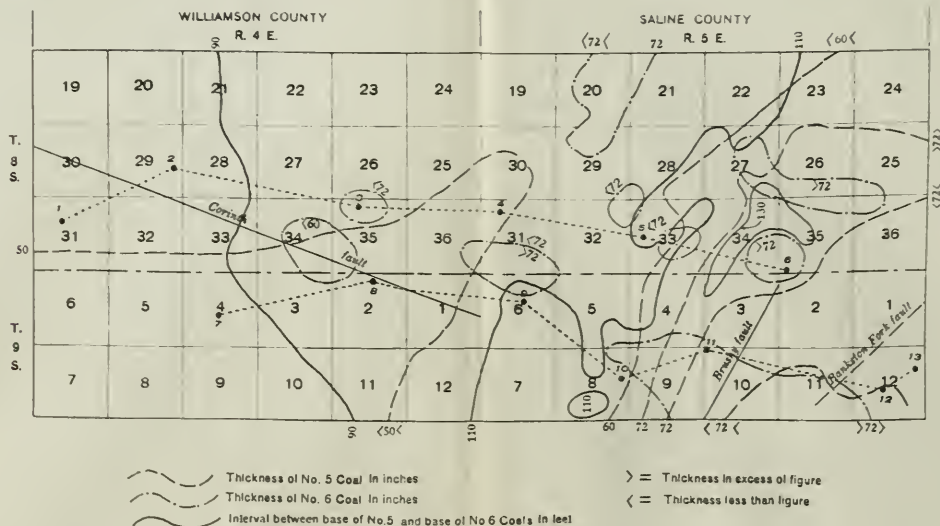
Structural map of parts of northeastern Williamson and western Saline counties, showing in red, contours on the base of No. 5 coal and the interval between No. 5 and No. 6 coals. The distribution of various outcropping formations is shown by appropriate patterns in black. Faults are indicated by continuous or interrupted blue lines. That part of the map east of line A-B is in the Galata Quadrangle and the part west of A-B lies in the West Frankfort Quadrangle.

REPORT OF INVESTIGATIONS NO. 2, PLATE NO. II.





A. Graphic section of strata encountered in a number of diamond drill borings in the area. Correlation limestones above No. 6 coal is indicated by broken lines and numbers 1, 2 and 3, as designated.

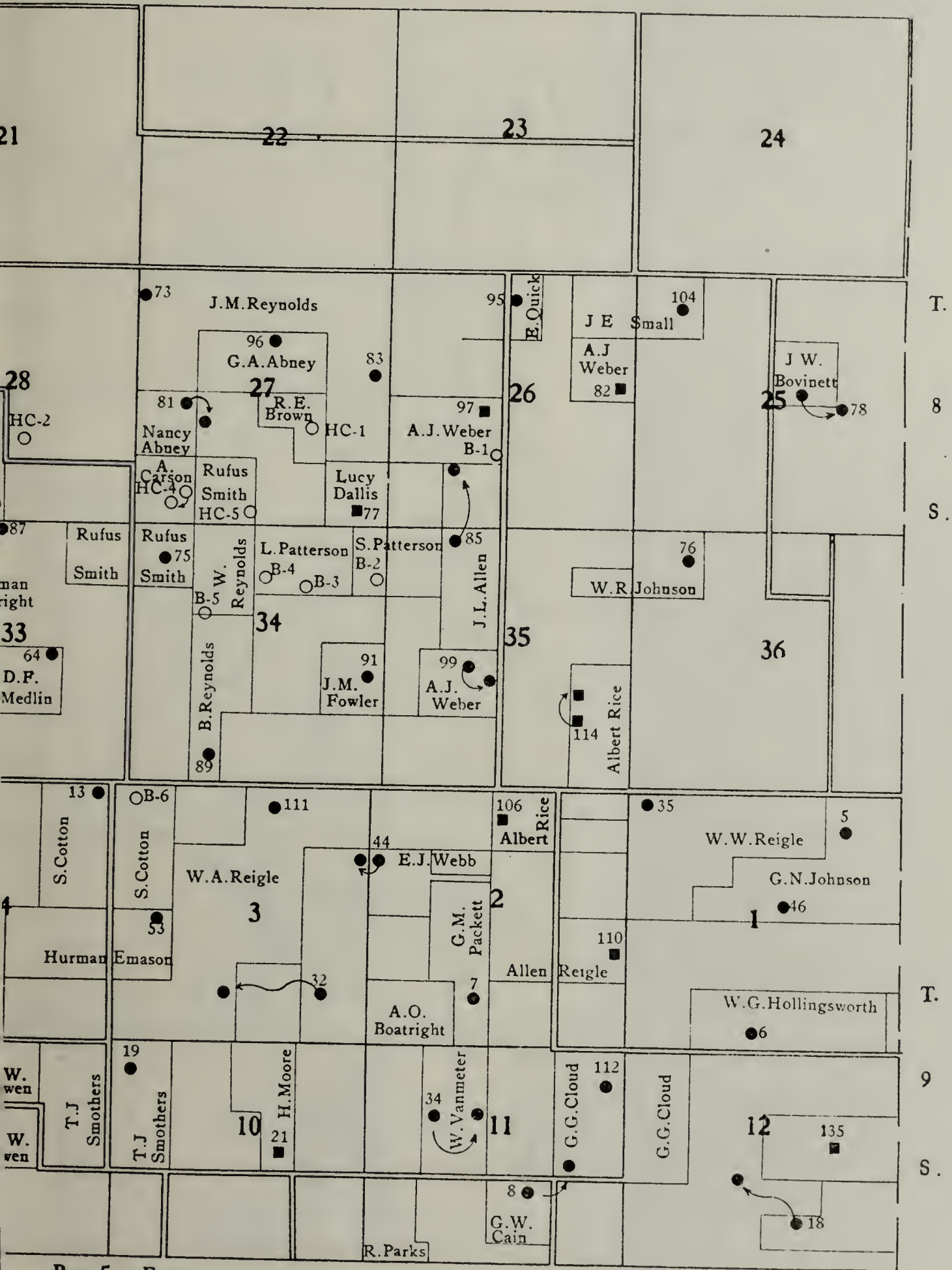


B. Index map upon which the thicknesses of and intervals between Nos. 5 and 6 coals are indicated.

7547.73
GR-2
c.3

REPORT OF INVESTIGATIONS NO. 2. PLATE NO. III.

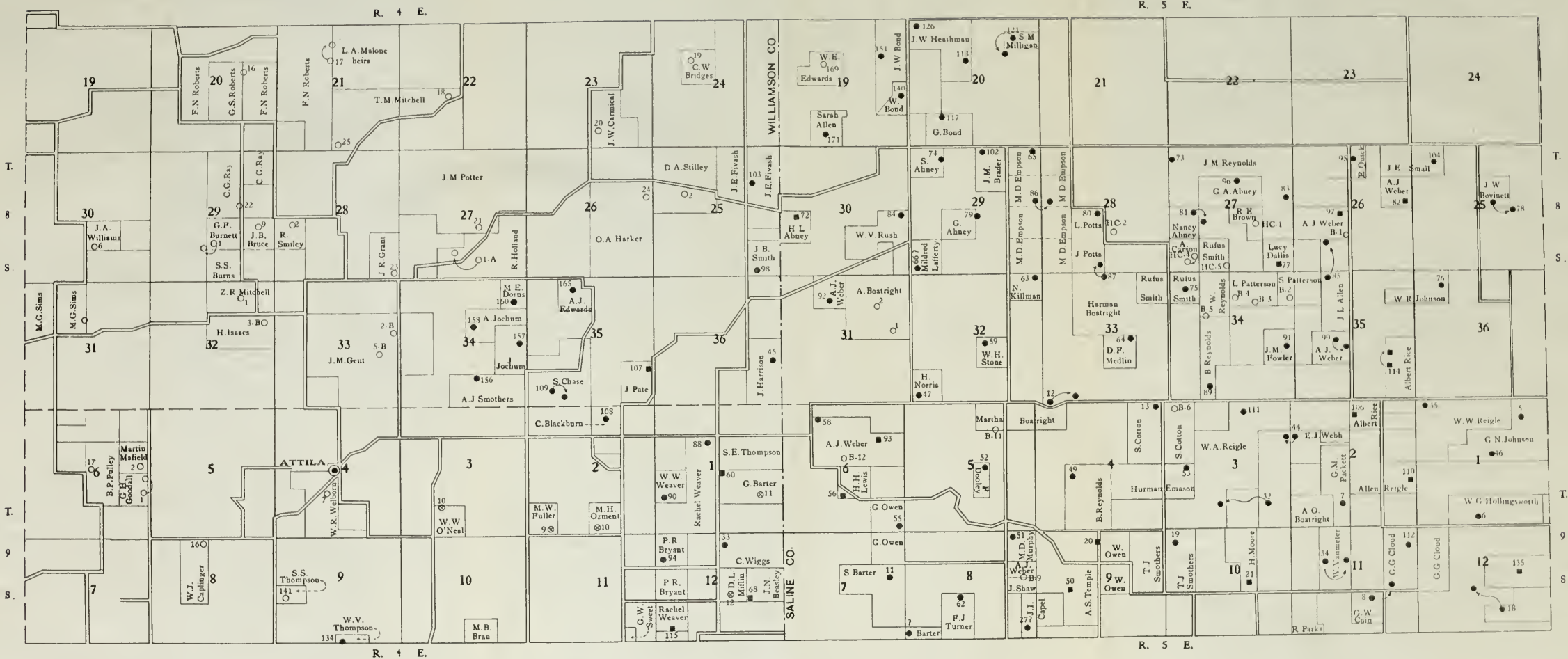
R. 5 E.



R. 5 E.

drilled since 1910. Necessary corrections in locations of some borings are in-
 ders which are listed in Table 1.

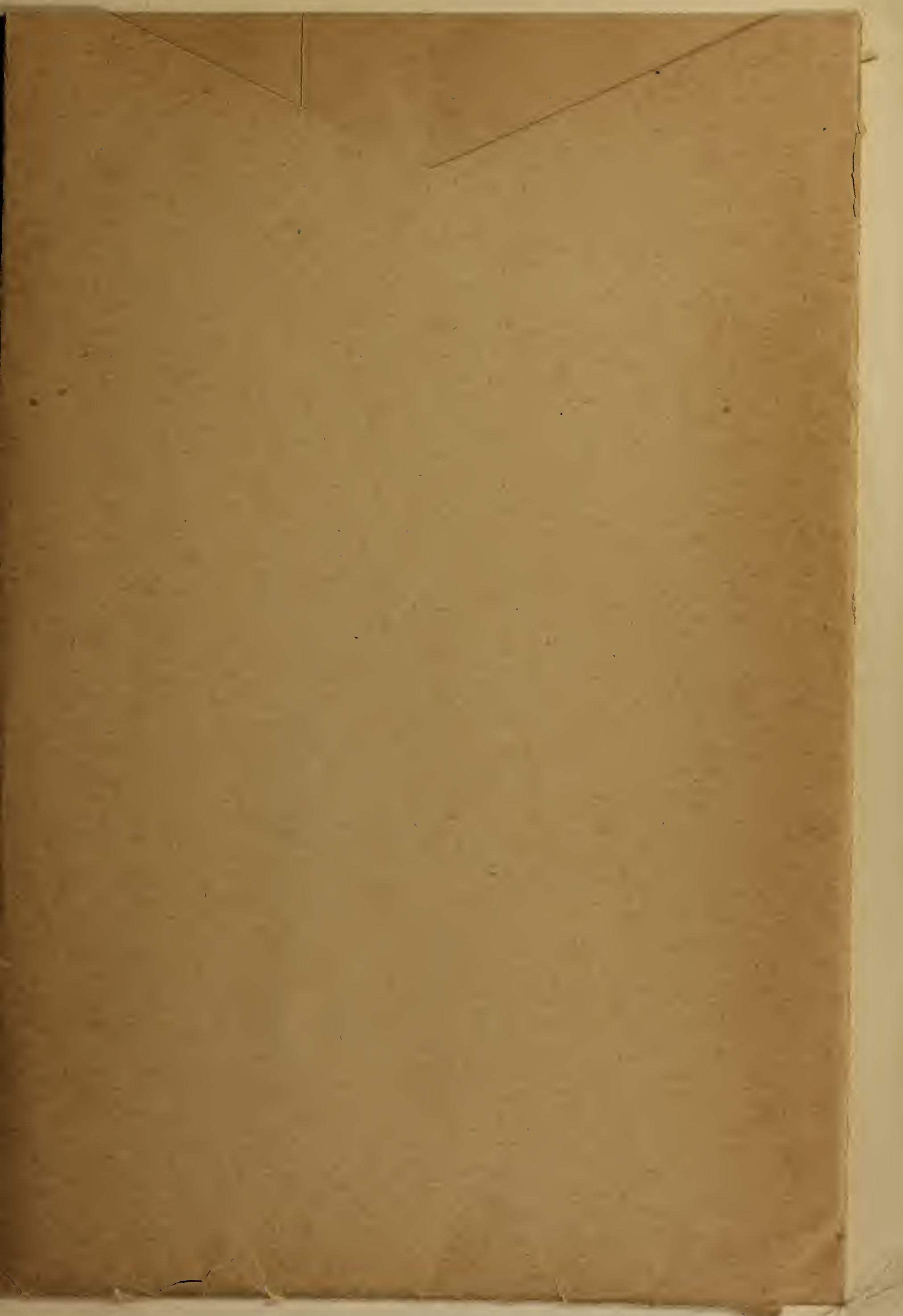
I-557. 73
 Gr-2
 C-3



- ⊙ Drill holes of Peabody Coal Co.
- Drill holes of Saline Co. Coal Co.
- Churn drill holes
- Diamond drill holes drilled since 1910

Copy of field map of Guarantee Trust Company showing location of borings of Peabody Coal Company and Saline County Coal Company drilled before 1910 and location of holes drilled since 1910. Necessary corrections in locations of some borings are indicated by arrows pointing to the symbols representing revised locations. The numbers accompanying the symbols refer to company numbers which are listed in Table 1.

J 557 73
Gr-2
c.3



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